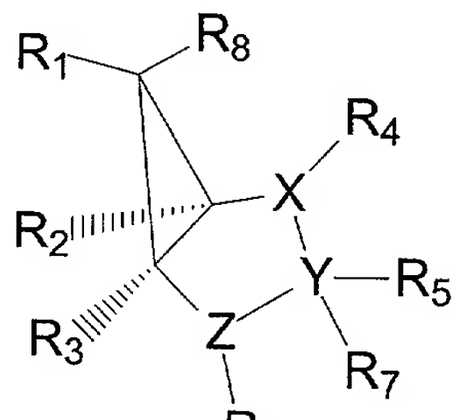
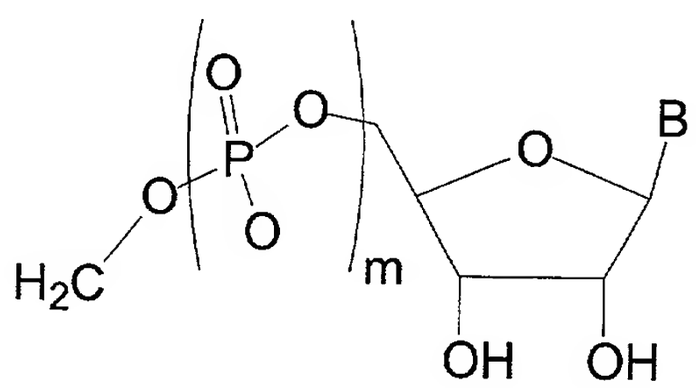
Claims

1. A chemical compound comprising the formula:



wherein $R_1 - R_8$ are moieties selected from the group consisting of R_9, CH_3, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside disphosphates, nucleoside triphosphates, and hydrogen;

R_9 is



wherein B is adenine, thymine, guanine, cytosine, uracil, nicotinamide, or analogs thereof;

m is 1 or 2;

X, Y, and Z are carbon, nitrogen, oxygen, or sulfur and a double bond may, optionally, exist between atoms X and Y or atoms Y and Z; and

salts or isolated enantiomers of said chemical compound.

2. The chemical compound according to claim 1, wherein said substituted alkyl groups are substituted with a moiety selected from the group consisting of C_{1-6} alkyl, halogen, CN, OH, COOH, NO_2, NH_2, SO_{2-4}, C_{1-20} heteroalkyl, C_{2-20} alkenyl, alkynyl, akynyl-aryl, alkynyl-heteroaryl, aryl, C_{1-20} alkyl-aryl, C_{2-20} alkenyl-aryl, heteroaryl, C_{1-20} alkyl-heteroaryl,

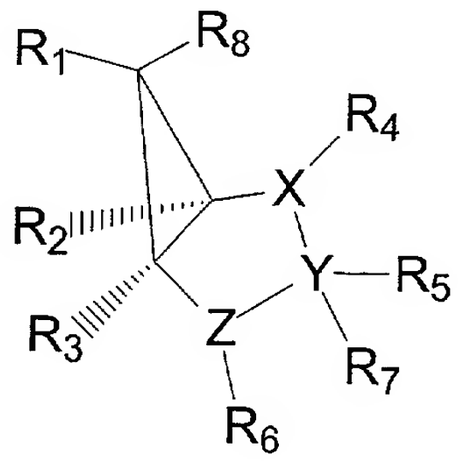
C_{2-20} alkenyl-heteroaryl, cycloalkyl, heterocycloalkyl, C_{1-20} alkyl-heteroycloalkyl, and C_{1-20} alkyl-cycloalkyl, any of which may be, optionally, substituted with a moiety selected from the group consisting of C_{1-6} alkyl, halogen, OH, NH_2, CN, NO_2, COOH, or SO_{2-4}.

3. The chemical compound according to claim 1, wherein said salt is a hydrohloride, hydrobromide, p-toluenesulfonate, phosphate, sulfate, perchlorate, acetate, trifluororacetate, propionate, citrate, malonate, succinate, lactate, oxalate, tartrate, benzoate, magnesium, calcium, morpholine, piperidine, dimethylamine, or diethylamine salt.

4. The chemical compound according to claim 1, wherein said isolated enantiomeric forms of the chemical compound are substantially free from one another.

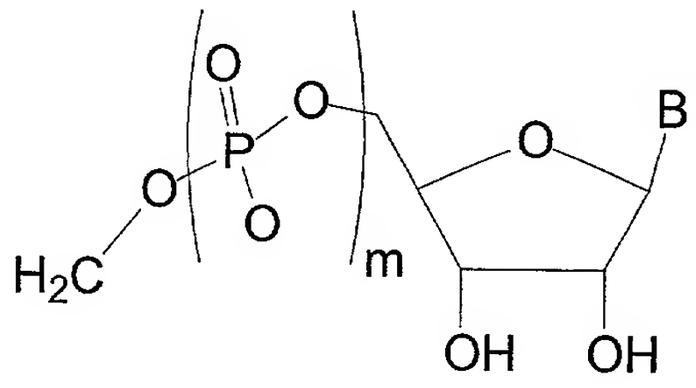
5. The chemical compound according to claim 4, wherein said isolated enantiomeric forms of said chemical compound is at least about in 90%, 95%, 97.5%, or 99% enantiomeric excess.

6. A composition comprising a carrier and a chemical compound comprising the formula:



wherein $R_1 - R_8$ are moieties selected from the group consisting of R_9, CH_3, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside disphosphates, nucleoside triphosphates, and hydrogen;

R_9 is



wherein B is adenine, thymine, guanine, cytosine, uracil, nicotinamide, or analogs thereof;

m is 1 or 2;

X, Y, and Z are carbon, nitrogen, oxygen, or sulfur and a double bond may, optionally, exist between atoms X and Y or atoms Y and Z; and

salts or isolated enantiomers of said chemical compound.

7. The composition according to claim 6, wherein said substituted alkyl groups are substituted with a moiety selected from the group consisting of C_{1-6} alkyl, halogen, CN, OH, COOH, NO_2, NH_2, SO_{2-4}, C_{1-20} heteroalkyl, C_{2-20} alkenyl, alkynyl, akynyl-aryl, alkynyl-heteroaryl, aryl, C_{1-20} alkyl-aryl, C_{2-20} alkenyl-aryl, heteroaryl, C_{1-20} alkyl-heteroaryl, C_{2-20} alkenyl-heteroaryl, cycloalkyl, heterocycloalkyl, C_{1-20} alkyl-heteroycloalkyl, and C_{1-20} alkyl-cycloalkyl, any of which may be, optionally, substituted with a moiety selected from the group consisting of C_{1-6} alkyl, halogen, OH, NH_2, CN, NO_2, COOH, or SO_{2-4}.

8. The composition according to claim 6, wherein said carrier is a pharmaceutical carrier.

9. The composition according to claim 8, wherein said pharmaceutical carrier is solid, liquid, or aerosol.

10. The composition according to claim 6, wherein said composition is in unit dose form.

11. The composition according to claim 6, wherein said substituted alkyl groups are substituted with a moiety selected from the group consisting of C_{1-6} alkyl, halogen, CN, OH, COOH, NO_2, NH_2, SO_{2-4}, C_{1-20} heteroalkyl, C_{2-20} alkenyl, alkynyl, akynyl-aryl, alkynyl-heteroaryl, aryl, C_{1-20} alkyl-aryl, C_{2-20} alkenyl-aryl, heteroaryl, C_{1-20} alkyl-heteroaryl, C_{2-20} alkenyl-heteroaryl, cycloalkyl, heterocycloalkyl, C_{1-20} alkyl-heteroycloalkyl, and C_{1-20} alkyl-cycloalkyl, any of which may be, optionally, substituted with a moiety selected from the group consisting of C_{1-6} alkyl, halogen, OH, NH_2, CN, NO_2, COOH, or SO_{2-4}.

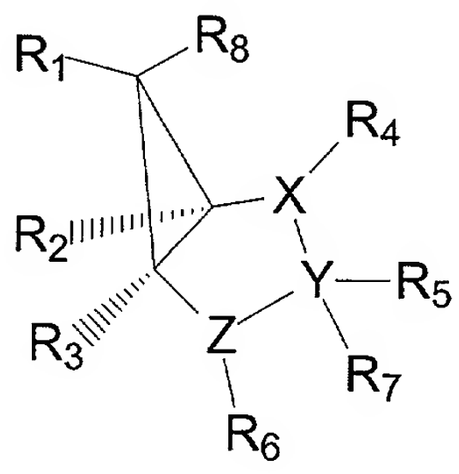
12. The composition according to claim 6, wherein said salt is a hydrohloride, hydrobromide, p-toluenesulfonate, phosphate, sulfate, perchlorate, acetate, trifluororacetate, propionate, citrate, malonate, succinate, lactate, oxalate, tartrate, benzoate, magnesium, calcium, morpholine, piperidine, dimethylamine, or diethylamine salt.

13. The composition according to claim 6, wherein said isolated enantiomeric forms of the chemical compound are substantially free from one another.

14. The composition according to claim 6, wherein said isolated enantiomeric forms of said compound is at least about in 90%, 95%, 97.5%, or 99% enantiomeric excess.

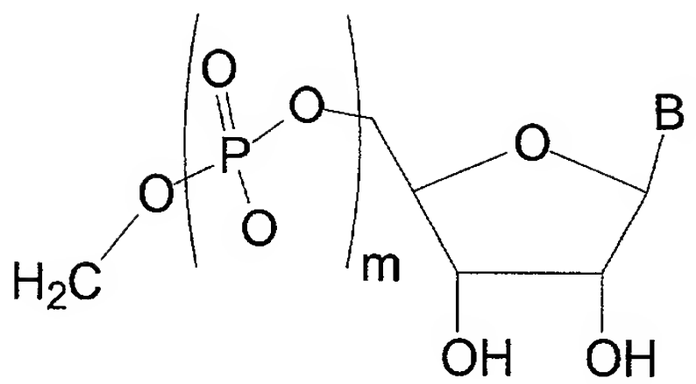
15. The composition according to claim 6, wherein said carrier is a powder, tablet, pill, capsule, cachet, suppository, or dispersible granule.

16. A method of suppressing, reducing, or inhibiting glycosyltransferase or glycosylhydrolase activity comprising contacting said glycosyltransferase or glycosylhydrolase with a composition, in an amount sufficient to suppress, reduce, or inhibit said glycosyltransferase or glycosyltransferase activity, comprising a carrier and a chemical compound comprising the formula:



wherein $R_1 - R_8$ are moieties selected from the group consisting of R_9, CH_3, alkyl groups, substituted alkyl groups, halogen, carboxyl, hydroxyl, phosphate, phosphonate, sugar residues, sugars, aryl, nucleosides, nucleoside monophosphates, nucleoside disphosphates, nucleoside triphosphates, and hydrogen;

R_9 is



wherein B is adenine, thymine, guanine, cytosine, uracil, nicotinamide, or analogs thereof;

m is 1 or 2;

X, Y, and Z are carbon, nitrogen, oxygen, or sulfur and a double bond may, optionally, exist between atoms X and Y or atoms Y and Z; and

salts or isolated enantiomers of said chemical compound.

17. The method according to claim 16, wherein said composition comprises a hydrochloride, hydrobromide, p-toluenesulfonate, phosphate, sulfate, perchlorate, acetate, trifluororacetate, propionate, citrate, malonate, succinate, lactate, oxalate, tartrate, benzoate, magnesium, calcium, morpholine, piperidine, dimethylamine, or diethylamine salt of said chemical compound.

18. The method according to claim 16, wherein said composition comprises isolated enantiomeric forms of said chemical compounds.

19. The method according to claim 18, wherein said isolated enantiomeric forms of said compound is in at least about 90%, 95%, 97.5%, or 99% enantiomeric excess.

20. The method according to claim 16, wherein said suppression, reduction, or inhibition of said glycosyltransferase or glycosylhydrolase activity provides therapeutic benefit.